Olin

MATERIAL SAFETY DATA

OCEAN NETWORK EMERGENCY PHONE 1-800-OLIN-911

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD,29 CFR 1910.1200.THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD.(REFER TO THE OSHA CLASSIFICATION IN SEC.I.)THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE.THE EXPOSURE TO THE COMMUNITY,IF ANY,IS QUITE DIFFERENT.

I. PRODUCT IDENTIFICATION

REVISION NO : 7
REVISION DATE : 4/15/96
PRODUCT CODE : CPE00139#
FILE NUMBER : CPE01436.0001
PRODUCT NAME: HTH(R) WINTERIZING KIT

THIS PRODUCT IS A COMBINATION OF THE FOLLOWING COMPONENTS:

PRODUCT CODE	FILE NUMBER
CPE00034#	CPE00002.0138
CPE00080#	CPE00010.0006
CPE00114#	CPE00045.0003

Olin

MATERIAL SAFETY DATA

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I. PRODUCT IDENTIFICATION

REVISION NO : 2
REVISION DATE : 8/01/94
PRODUCT CODE : CPE00034#
FILE NUMBER : CPE00002.0138
PRODUCT NAME: SOCK IT(R) SHOCK TREATMENT & SUPERCHLORINATOR

SYNONYMS: None
CHEMICAL FAMILY: Hypochlorite
FORMULA: Not Applicable/Mixture
DESCRIPTION: Sanitizer and oxidizer
OSHA HAZARD CLASSIFICATION: Oxidizer, irritant

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Calcium hypochlorite
CAS NUMBER: 7778-54-3
PERCENTAGE RANGE: 65-75%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Sodium chloride
CAS NUMBER: 7647-14-5
PERCENTAGE RANGE: 10-20%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Calcium chlorate
CAS NUMBER: 10137-74-3
PERCENTAGE RANGE: 0-5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Calcium chloride
CAS NUMBER: 10043-52-4
PERCENTAGE RANGE: 0-5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Calcium hydroxide
CAS NUMBER: 1305-62-0
PERCENTAGE RANGE: 0-4%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		5		5
CEILING:	None		None	
STEL:	None		None	

CAS or CHEMICAL NAME: Calcium carbonate
CAS NUMBER: 471-34-1
PERCENTAGE RANGE: 0-4%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA(PEL)		ACGIH(TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		15 (Total Dust) 5 (Respirable fraction)		10
CEILING:	None		None	
STEL:	None		None	

CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 5.5-10%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH EYES, SKIN OR CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS: Keep tightly sealed. Store in a cool, dry, well-ventilated area.

DO NOT STORE AT TEMPERATURES ABOVE: 52 Deg.C (125 Deg.F)

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Approximately 2 years at temperatures below 52 Deg.C (125 Deg.F) and low humidity.

INCOMPATIBLE MATERIALS FOR PACKAGING: Containers must be clean and free of organic residues.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Acids, other organic materials, oxidizers, all corrosive liquids

IV. PHYSICAL DATA

APPEARANCE: White, free flowing powder
FREEZING POINT: Not Applicable
BOILING POINT: Not Applicable
DECOMPOSITION TEMPERATURE: 177 Deg.C (350 Deg.F)
SPECIFIC GRAVITY: Not Applicable
BULK DENSITY: 0.8 g/cc, loose
pH @ 25 DEG.C: 10.5-11.5 (1% solution)
VAPOR PRESSURE @ 25 DEG.C: Not Applicable
SOLUBILITY IN WATER: Approximately 18% @ 25 Deg.C (Product also contains calcium hydroxide and calcium carbonate which will leave a residue.)
VOLATILES, PERCENT BY VOLUME: Not Applicable
EVAPORATION RATE: Not Applicable
VAPOR DENSITY: Not Applicable
MOLECULAR WEIGHT: 143 (Active ingredient)
PRODUCT IS: Not cryogenic and not a compressed gas
ODOR: Chlorine-like
COEFFICIENT OF OIL/WATER DISTRIBUTION: Not Applicable

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:
RESPIRATORY PROTECTION: Wear NIOSH/MSHA approved respirator.

VENTILATION: Use local exhaust ventilation to minimize dust and chlorine levels.

SKIN PROTECTIVE EQUIPMENT: Wear gloves, boots, chemical goggles, aprons or impermeable suit to avoid skin and eye contact.

EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):

RESPIRATOR TYPE:	NIOSH/MSHA approved full face-piece with chlorine cartridges and dust/mist filter
GLOVE TYPE:	Neoprene or PVC
BOOT TYPE:	Neoprene or PVC
APRON TYPE:	Neoprene or PVC
FACE SHIELD:	Not Normally Required
PROTECTIVE SUIT:	Not Normally Required

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:
- FLAMMABLE: No
- COMBUSTIBLE: No
- PYROPHORIC: No
- FLASH POINT: Not Applicable
- AUTOIGNITION TEMPERATURE: Not Applicable
- FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): Not Applicable

NFPA RATINGS:
- Health: 2
- Flammability: 0
- Reactivity: 2
- Special Hazard Warning: OXIDIZER

HMIS RATINGS:
- Health: 2
- Flammability: 0
- Reactivity: 2

EXTINGUISHING MEDIA: Not Applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. Also see Section XI.

OTHER: Do not use dry extinguishers containing ammonium compounds

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:
- TEMPERATURES ABOVE: 177 Deg.C (350 Deg.F)
- MECHANICAL SHOCK OR IMPACT: No
- ELECTRICAL (STATIC) DISCHARGE: No
- HAZARDOUS POLYMERIZATION: Will not occur
- INCOMPATIBLE MATERIALS: Acids, organics, nitrogen containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), corrosive, flammable or combustible materials
- HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas
- OTHER CONDITIONS TO AVOID: High temperatures > 125 Deg.F, high humidity

SUMMARY OF REACTIVITY:
- OXIDIZER: Yes
- PYROPHORIC: No
- ORGANIC PEROXIDE: No
- WATER REACTIVE: No
- OTHER: Olin calcium hypochlorite products meet the specifications of ASTM method E-487-74 as set forth in 49 C. F. R. Sec. 173.21, Title 49-Code of Federal Regs.(DOT Regs.)

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, it should be removed immediately and laundered before reuse.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: Remove victim to fresh air. Support respiration if needed. Call a physician.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION
Inhalation, Skin, Eye, Ingestion

WARNING STATEMENT AND WARNING PROPERTIES
HARMFUL IF INHALED OR INGESTED. HARMFUL IF EXPOSED TO SKIN OR EYES.

HUMAN RESPONSE DATA
ODOR THRESHOLD: Approximately 1.7 mg/cubic-meter (0.3 ppm) based on odor of chlorine.
IRRITATION THRESHOLD: There is no data for irritation threshold.
IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The product has the potential to be immediately dangerous to life or health.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION
ACUTE:
Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

CHRONIC:
Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE
Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN
ACUTE:
Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate.
CHRONIC:
Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

INGESTION
ACUTE:
Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration.
CHRONIC:
There are no known or reported effects from chronic exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Asthma, respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY
None known or reported

ANIMAL TOXICOLOGY
ACUTE TOXICITY:
Inhalation LC 50: Approximately 1700 mg/cubic-meter for 1 hour in the rat based on acute toxicity for chlorine
Oral LD 50: 850 mg/kg (rat)
Dermal LD 50: > 2 g/kg (rabbit)
Aquatic LC 50: 0.088 mg/l (bluegill)
Causes burns to eyes and skin

CHRONIC TOXICITY:
There are no known or reported effects from repeated exposure.

REPRODUCTIVE TOXICITY:
There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

MUTAGENICITY:

Calcium hypochlorite has been reported to produce mutagenic activity in two in vitro assays. It has, however, been shown to lack the capability to produce mutations in animals based on results from the micronucleus assay. In vitro assays frequently are inappropriate to judge the mutagenic potential of bactericidal chemicals due to a high degree of cellular toxicity. The concentration which produces mutations in these in vitro assays is significantly greater than the concentrations used for disinfection. Based on high cellular toxicity in in vitro assays and the lack of mutagenicity in animals, the risk of genetic damage to humans is judged not significant.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:
LAND (U.S. DOT): CALCIUM HYPOCHLORITE, HYDRATED MIXTURES, 5.1, UN 2880, PGII

WATER (IMO): SAME AS ABOVE

AIR (IATA/ICAO): SAME AS ABOVE

HAZARD LABEL/PLACARD: OXIDIZER
REPORTABLE QUANTITY: 10 lbs. (Per 49 CFR 172.101, Appendix)
EMERGENCY GUIDE NO: 45

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: 10 lbs. (as Calcium hypochlorite) Per 40 CFR 302.4

SPILL MITIGATION PROCEDURES:
Hazardous concentrations in air may be found in local spill area and immediately downwind. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. All water utilized to assist in fume suppression, decontamination or fire suppression may be contaminated and must be contained before disposal.

WATER RELEASE: This material is heavier than water. This material is soluble in water. Monitor all exit water for available chlorine and pH. Advise local authorities of any contaminated water release.

LAND SPILL: Containerize all virgin material in a clean dry container using clean dedicated equipment to clean up material. Containerize all contaminated material in a clean dry container and remove to a well ventilated area being sure to not seal tightly. Contaminated spill mate-rial may become a hazardous waste.

SPILL RESIDUES:
Dispose of per guidelines under Section XII, WASTE DISPOSAL.

This material may be neutralized for disposal; you are requested to contact OCEAN at 800-OLIN-911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
For a spill of this material no extra protection beyond that listed in Section V is required.
In a fire involving this material a self contained breathing apparatus (SCBA) is required as well as standard fire protective clothing.

XII. WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001.

If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous solid waste, it must be disposed of in accordance with local, state, and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by treatment.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:
This substance is listed on the Toxic Substances Control Act inventory.

NSF LIMITS: NSF Maximum Drinking Water Use Concentration - 46 mg/l as calcium hypochlorite

SUPERFUND AMENDMENT AND REAUTHORIZATION ACT TITLE III:
HAZARD CATEGORIES, PER 40 CFR 370.2:
HEALTH:
Immediate (Acute)
PHYSICAL:
Fire and Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:
EXTREME HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:
None Established
SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
None Established

XIV. ADDITIONAL INFORMATION

REGULATED UNDER FIFRA, USDA & FDA

MSDS REVISION STATUS: Revision to shelf life limitation (06)

XV. MAJOR REFERENCES

1. ACGIH Guide to Protective Clothing. Cincinnati, OH: American Conference of Government Industrial Hygienists, 1987.
2. ANSI Z88.2. Recommended Practice for Respiratory Protection. American National Standards Institute, New York, NY.
3. Baker, C. J., The Fire Fighter's Handbook of Hazardous Materials, 4th Ed., Indiana: Maltese Enterprises, Inc., 1984.
4. Bretherick, L., Handbook of Reactive Chemical Hazards, 3rd Ed., Boston, MA: Butterworths, 1985.
5. Casarett, L. and J. Doull, Eds., Toxicology: The Basic Science of Poisons, 3rd Ed., New York: Macmillan Publishing Co., Inc. 1986.
6. CERIS (Chemical Emergency Response Information System) On Line Database. Association of American Railroads.
7. Chemical Degradation and Permeation Database and Selection Guide for Resistant Protective Materials. Austin, TX.
8. Clayton, G. and F. Clayton, Eds., Patty's Industrial Hygiene and Toxicology, Vol. 2A-C 3rd Ed., New York: John Wiley & Sons, 1981-1982.
9. Code of Federal Regulations, Titles 21, 29, 40 and 49. Washington, DC: U.S. Government Printing Office.
10. Emergency Response Guide (D.O.T.). Washington, DC: U.S. Government Printing Office, 1987.
11. Fire Protection Guide on Hazardous Materials, 9th Ed., National Fire Protection Association, Batterymarch Park, Quincy, MA, 1986.
12. Gosselin, R., et al., Gosselin-Clinical Toxicology of Commercial Products, 5th Ed., Baltimore: Williams and Wilkins, 1984.
13. Hazardline, Occupational Health Services Inc., New York, NY.
14. IARC Monogram on the Evaluation of Carcinogenic Risk of Chemicals to Man., Geneva: World Health Organization, International Agency for Research on Cancer.
15. Lenga, R., The Sigma-Aldrich Library of Chemical Safety Data, 1st Ed., Milwaukee, WI: Sigma-Aldrich Corporation, 1985.
16. Lewis, R. and D. Sweet, Eds., Registry of Toxic Effects of Chemical Substances, 1985-1986, Washington, DC: U.S. Government Printing Office, 1987.
17. Medline, U.S. National Library of Medicine, Bethesda, MD.
18. NIOSH Pocket Guide to Chemical Hazards. Washington, DC: U.S. Government Printing Office, 1985.
19. Olin Respiratory Protection Manual.
20. Sax, N. Irving, Dangerous Properties of Hazardous Materials 6th Ed., New York: Van Nostrand Reinhold Company, 1984.
21. Threshold Limit Values and Biological Exposure Indices for 1987-88. Cincinnati, OH: American Conference of Government Industrial Hygienists, 1987.
22. Toxic Substances Control Act Inventory, Washington, DC: U.S. Government Printing Office, 1986.
23. Ishidate, M. et al. (1984). Primary mutagenicity screening of food additives currently used in Japan. Fd. Chem. Toxicol. 22:623-636.

24. Hayashi, M. et al. (1988). Micronucleus tests in mice on 39 food additives and eight miscellaneous chemicals. Fd. Chem. Toxicol. 26:487-500.

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

OLIN MSDS CONTROL GROUP
Olin Corporation
120 Long Ridge Road
Stamford, CT 06904

Phone Number: (203) 356-3449

OLIN CORPORATION SUBSIDIARIES AND AFFILIATED ENTITIES: ASAHI-OLIN LTD., BRIDGEPORT BRASS CORPORATION, OLIN AEROSPACE COMPANY, A.J. OSTER COMPANY, OLIN FABRICATED METAL PRODUCTS,INC., OLIN HUNT SPECIALTY PRODUCTS,INC., OLIN SPECIALTY METALS CORPORATION, GENERAL DEFENSE CORPORATION, NIACHLOR, PHYSICS INTERNATIONAL COMPANY, SUPERIOR POOL PRODUCTS, INC., ETOXYL, C.A., OCG MICROELECTRONIC MATERIALS, INC., OLIN ENGINEERED SYSTEMS, INC., YAMAHA-OLIN METAL CORPORATION, NORDESCLOR, S.A.

Olin

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I. PRODUCT IDENTIFICATION

REVISION NO : 4
REVISION DATE : 4/15/96
PRODUCT CODE : CPE00080#
FILE NUMBER : CPE00010.0006
PRODUCT NAME: HTH(R) CLARIFIER

SYNONYMS: None
CHEMICAL FAMILY: Cationic polymer
FORMULA: Not Applicable/Mixture
DESCRIPTION: Coagulant
OSHA HAZARD CLASSIFICATION: This product is not considered to be hazardous per 29 CFR 1910.1200.

II. COMPONENT DATA

PRODUCT COMPOSITION

DESCRIPTIVE NAME: Cationic polymer
CAS NUMBER: Supplier Proprietary
PERCENTAGE RANGE: 1-6%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 94-99%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS:
DO NOT STORE AT TEMPERATURES BELOW: 3.3 Deg.C (38 Deg.F)
PRODUCT STABILITY AND COMPATIBILITY
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Refer to Section VII

IV. PHYSICAL DATA

APPEARANCE: Clear blue liquid
FREEZING POINT: -2.8-0 Deg.C (27-32 Deg.F)
BOILING POINT: >100 Deg.C (>212 Deg.F)
DECOMPOSITION TEMPERATURE: No Data
SPECIFIC GRAVITY: 1.00-1.033
DENSITY: 1.09 (g/ml)
pH: 6-8
VAPOR PRESSURE @ 25 DEG.C: Same as water
SOLUBILITY IN WATER: Completely soluble
VOLATILES, PERCENT BY VOLUME: >95
EVAPORATION RATE: 1 (water=1)
VAPOR DENSITY: Same as water
MOLECULAR WEIGHT: Not Applicable/Mixture
ODOR: None
COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:
RESPIRATORY PROTECTION: Respiratory protection not normally needed.
VENTILATION: None beyond normal ventilation.
SKIN AND EYE PROTECTIVE EQUIPMENT: Use safety glasses with side shields.

EQUIPMENT SPECIFICATIONS:
RESPIRATOR TYPE: Not normally needed
PROTECTIVE CLOTHING TYPE (This includes: gloves, boots, apron, protective suit); None required

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:
FLAMMABLE: No
COMBUSTIBLE: No
PYROPHORIC: No
FLASH POINT: >93 Deg.C (>200 Deg.F)
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): Not Applicable

NFPA RATINGS:
Not Established
HMIS RATINGS:
Health: 0
Flammability: 0
Reactivity: 0
Personal Protection: A

EXTINGUISHING MEDIA:
Not Applicable-Choose extinguishing media suitable for surrounding materials.
FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:
TEMPERATURES ABOVE: Stable at normal room temperature.
HAZARDOUS POLYMERIZATION: Will not occur
INCOMPATIBLE MATERIALS: Strong acids and bases, carbon steel, copper
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, hydrogen chloride, ammonia, oxides of nitrogen

SUMMARY OF REACTIVITY:
OXIDIZER: No
PYROPHORIC: No
ORGANIC PEROXIDE: No
WATER REACTIVE: No

VIII. FIRST AID

EYES: Not an eye irritant. Washing any substance from the eye with water is a good safety practice.

SKIN: Not a skin irritant. Washing any substance off the skin with water is a good safety practice.

INGESTION: This product is not toxic by ingestion. Drink water to dilute.

INHALATION: Not a likely route of exposure.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

This product will not exert a significant adverse effect to health from any route of exposure.

WARNING STATEMENTS AND WARNING PROPERTIES

DO NOT TAKE INTERNALLY.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: No Data

IRRITATION THRESHOLD: No Data

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The IDLH concentration has not been established for this product

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION:

ACUTE:

No significant adverse effects to health would be expected to occur from inhalation.

CHRONIC:

There are no known or reported effects from chronic exposure.

SKIN:

No significant adverse effects to health would be expected to occur from dermal contact.

EYE:

No significant adverse effects to health would be expected to occur from eye contact.

INGESTION:

ACUTE:

This product is considered practically nontoxic from oral ingestion. There are no known or reported effects from acute ingestion.

CHRONIC:

There are no known or reported effects from chronic exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

There are no medical conditions known to be aggravated by exposure.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

There are no chemicals known to enhance the toxicity of the product.

ANIMAL TOXICITY

Acute Toxicity:

Inhalation LC 50: No Data
Dermal LD 50: > 2 g/kg. (rabbit)
Oral LD 50: > 5 g/kg. (rat)
Irritation: Not a skin or eye irritant

ACUTE TARGET ORGAN TOXICITY

There are no organs known to be damaged from exposure to this product.

Data indicates that this product will not produce an allergic skin reaction.

CHRONIC TARGET ORGAN TOXICITY

There are no known or reported effects from repeated exposure.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY

A teratology study in rabbits and a two-generation reproduction study in rats showed this product did not produce birth defects or affect reproduction.

CARCINOGENICITY

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

MUTAGENICITY

This product is not known or reported to be mutagenic.
A similar product has been tested and was found to be negative for mutagenicity in the Ames assay.

AQUATIC TOXICITY

The following data was generated with 40% active ingredient:

Bluegill sunfish, 96 hr. LC50: 0.82-1.3 mg/l
Rainbow trout, 96 hr. LC50: 0.37 mg/l
Daphnia magna, 48 hr. LC50: 0.9 mg/l (in clear water)
Daphnia magna, 48 hr. LC50: 1.2-2.5 mg/l (in 50 ppm clay suspension)

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL.

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: Not Applicable (Per 40 CFR 302.4)

SPILL MITIGATION PROCEDURES:

Water Release - this material is heavier than water. This material is soluble in water.

Land Spill - Compatible absorbents: Saw dust, Sand, Clay soil, and Commercial absorbents.

SPILL RESIDUES: Dispose of per guidelines under Section XII, WASTE DISPOSAL.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
In case of fire, use normal fire fighting equipment, including self-contained breathing apparatus (SCBA).

XII. WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic Substances Control Act Inventory.

SUPERFUND AMENDMENT AND REAUTHORIZATION ACT TITLE III:
HAZARD CATEGORIES, PER 40 CFR 370.2:
HEALTH: None
PHYSICAL: None

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP. A:
EXTREMELY HAZARDOUS SUBSTANCES - THRESHOLD PLANNING QUANTITY:
None Established
SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
None Established

XIV. ADDITIONAL INFORMATION

MSDS REVISION STATUS: All Sections (except X and XII) revised

XV. MAJOR REFERENCES

References are available upon request.

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

OLIN MSDS CONTROL GROUP
Olin Corporation
501 Merritt 7
P.O. Box 4500
Norwalk, CT 06856-4500
Phone Number: (800) 511-MSDS

OLIN CORPORATION SUBSIDIARIES AND AFFILIATED ENTITIES: ASAHI-OLIN LTD., BRIDGEPORT BRASS CORPORATION, OLIN AEROSPACE COMPANY, A.J. OSTER COMPANY, OLIN FABRICATED METAL PRODUCTS,INC., OLIN HUNT SPECIALTY PRODUCTS,INC., OLIN SPECIALTY METALS CORPORATION, GENERAL DEFENSE CORPORATION, NIACHLOR, PHYSICS INTERNATIONAL COMPANY, SUPERIOR POOL PRODUCTS, INC., ETOXYL, C.A., OCG MICROELECTRONIC MATERIALS, INC., OLIN ENGINEERED SYSTEMS, INC., YAMAHA-OLIN METAL CORPORATION, NORDESCLOR, S.A.

Olin

MATERIAL SAFETY DATA

OCEAN NETWORK EMERGENCY PHONE 1-800-OLIN-911

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD,29 CFR 1910.1200.THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD.(REFER TO THE OSHA CLASSIFICATION IN SEC.I.)THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE.THE EXPOSURE TO THE COMMUNITY,IF ANY,IS QUITE DIFFERENT.

I. PRODUCT IDENTIFICATION

REVISION NO : 3
REVISION DATE : 4/10/96
PRODUCT CODE : CPE00114#
FILE NUMBER : CPE00045.0003
PRODUCT NAME: HTH(R) ALLPURPOSE ALGAECIDE

SYNONYMS: None
CHEMICAL FAMILY: Quaternary ammonium chloride
FORMULA: Not Applicable/Mixture
USE DESCRIPTION: Swimming Pool Algaecide
OSHA HAZARD CLASSIFICATION: Eye hazard, lung toxin, skin hazard

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Alkyl dimethyl benzyl ammonium chloride
CAS NUMBER: 68424-85-1
PERCENTAGE RANGE: 10%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None established

CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 90%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.
STORAGE CONDITIONS: Store in a cool, ventilated, dry area.
DO NOT STORE AT TEMPERATURES ABOVE: 100 Deg.C (212 Deg.F)
OTHER: Keep from freezing.

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Approximately one year

INCOMPATIBLE MATERIALS FOR PACKAGING: None known

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Oxidizers, materials containing free chlorine

IV. PHYSICAL DATA

APPEARANCE: Clear blue liquid
MELTING POINT: Not Applicable
BOILING POINT: 100 Deg.C (212 Deg.F)
DECOMPOSITION TEMPERATURE: No Data
SPECIFIC GRAVITY: 0.99
BULK DENSITY: Not Applicable
pH: 7-8 @ 10% Concentration
VAPOR PRESSURE @ 25 DEG.C: No Data
SOLUBILITY IN WATER: Miscible
VOLATILES, PERCENT BY VOLUME: 90
EVAPORATION RATE: No Data
VAPOR DENSITY: No Data
MOLECULAR WEIGHT: Mixture/Not Applicable
ODOR: Amine-like
COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Respirator protection not normally needed since the volatility is low. If vapors, mists, or aerosols are generated, wear a NIOSH/MSHA approved respirator.

VENTILATION: Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.

SKIN PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with safety glasses. A full impermeable suit is recommended if exposure is possible to large portion of body.

EQUIPMENT SPECIFICATIONS:

RESPIRATOR TYPE:	NIOSH/MSHA approved HEPA filter plus organic vapor cartridge
GLOVE TYPE:	Impervious
BOOT TYPE:	Impervious
APRON TYPE:	Impervious
PROTECTIVE SUIT:	Impervious

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:
- FLAMMABLE: No
- COMBUSTIBLE: No
- PYROPHORIC: No

FLASH POINT: None - Method ASTM D-56
AUTOIGNITION TEMPERATURE: No Data
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:
- Health: 1
- Flammability: 0
- Reactivity: 1

EXTINGUISHING MEDIA: Not Applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS:
Use water to cool containers exposed to fire.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE
TEMPERATURES ABOVE: No Data
MECHANICAL SHOCK OR IMPACT: No
ELECTRICAL (STATIC) DISCHARGE: No
HAZARDOUS POLYMERIZATION: Will Not Occur
INCOMPATIBLE MATERIALS: Oxidizers, materials containing free chlorine
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, and ammonium compounds.

SUMMARY OF REACTIVITY:
- OXIDIZER: No
- PYROPHORIC: No
- ORGANIC PEROXIDE: No
- WATER REACTIVE: No

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician. If clothing comes in contact with the product, the clothing should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION
Inhalation, Skin, Eye, Ingestion

WARNING STATEMENTS AND WARNING PROPERTIES
HARMFUL IF INHALED OR INGESTED.
HARMFUL IF EXPOSED TO SKIN OE EYES.

HUMAN DOSE RESPONSE DATA
IRRITATION AND ODOR THRESHOLD:
There is no data for irritation or odor threshold.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE:

INHALATION:
ACUTE: Inhalation of this material is irritating to the nose, mouth, throat, and lungs. It may also cause burns to the respiratory tract which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations may result in permanent lung damage.
CHRONIC: Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE:
ACUTE: Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN:
ACUTE: Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling, and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate.
CHRONIC: Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

INGESTION:
ACUTE: Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.
CHRONIC: There are no known or reported effects from chronic exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
Asthma and respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:
None known or reported.

ANIMAL TOXICOLOGY:
ACUTE TOXICITY:
Inhalation LC 50 - No data
Oral LD 50 - Approximately 3-4 g/kg
Dermal LD 50 - > 2g/kg
CAUSES BURNS TO EYES AND SKIN.

CHRONIC TOXICITY: There are no known or reported effects from repeated exposure.

DEVELOPMENTAL AND REPRODUCTIVE TOXICITY: There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

MUTAGENICITY: This product is not known or reported to be mutagenic.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL.

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: None established (Per 40 CFR 302.4)

SPILL MITIGATION PROCEDURES:

Water Release - This material is heavier than water. This material is soluble in water.

Land Spill - Compatible absorbents: Saw dust, sand, clay soil, vermiculite and commercial absorbents.

SPILL RESIDUES:
Dispose of per guidelines under Section XII, WASTE DISPOSAL.
This material may be neutralized for disposal; you are requested to contact OCEAN at 800-OLIN-911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
No extra protection required beyond that listed in Section V (in case of fire, use normal fire fighting equipment).

XII. WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic Substances Control Act inventory.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III:

HAZARD CATEGORIES, PER 40 CFR 370.2:
HEALTH: Immediate (Acute)
PHYSICAL: None

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:
None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
None Established

XIV. ADDITIONAL INFORMATION

MSDS REVISION STATUS: Address changed in Section XV.

XV. MAJOR REFERENCES

References are available upon request.

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

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